

CLAIMS

1. A process for preparing a peracid or diacylperoxide, characterized in that a mixed anhydride of formula $R^1[C(O)OC(O)OR^2]_n$ or $[R^3C(O)OC(O)O]_pR^4$ is contacted with a hydroperoxide of formula $R^5[OOH]_m$ in the presence of a base, wherein
 - 5 R^1 represents a mono-, di-, tri- or tetrasubstituted C_1-C_{19} hydrocarbon group, optionally containing one or more hetero atoms,
 n is 1-4,
 - 10 R^2 represents a C_1-C_{20} hydrocarbon group, optionally containing one or more hetero atoms,
 - 15 R^3 represents a C_1-C_{19} hydrocarbon group, optionally containing one or more hetero atoms,
 - 20 R^4 represents a di-, tri- or tetrasubstituted C_1-C_{20} hydrocarbon group, optionally containing one or more hetero atoms,
 p is 2-4,
 - 25 R^5 represents hydrogen or a mono- or disubstituted C_3-C_{18} tertiary alkyl or C_2-C_{20} acyl group, in which the tertiary alkyl or acyl group may optionally contain one or more hetero atoms,
 - 30 m is 1 or 2, and
if R^5 represents hydrogen, m is 1,
provided that if the hydroperoxide is an α,α' -dihydroperoxyperoxide, the reaction is not carried out in an inert two-phase solvent system comprising a polar solvent and an apolar solvent.
2. A process according to claim 1, characterized in that n is 1 or 2.
3. A process according to claim 1, characterized in that R^1 and R^3 independently represents a linear or branched C_4-C_{12} alkyl or C_6-C_{12} aryl group, said alkyl and aryl groups optionally being substituted with a hydroxy group, a linear or branched C_1-C_4 alkyl group or a halogen atom.

4. A process according to claim 1, characterized in that R^2 represents a C_3 - C_8 alkyl group or a C_6 - C_{12} aryl group.
5. A process according to claim 1, characterized in that a mixed anhydride of formula $R^1[C(O)OC(O)OR^2]_n$ is used.
6. A process according to claim 1, characterized in that R^5 represents hydrogen or a monovalent C_3 - C_{18} tertiary alkyl group.
- 10 7. A process according to claim 1, characterized in that the base is an alkali metal hydroxide.
8. A process according to claim 1, characterized in that the reaction is carried out at a pH of 5 or higher.
- 15 9. A process according to claim 1, characterized in that the reaction is carried out in the absence of an organic solvent.
- 20 10. A process according to claim 1, characterized in that the mixed anhydride is prepared by contacting a carboxylic acid of formula $R^1[C(O)OH]_n$ with a halogen formate of formula $XC(O)OR^2$ or $[XC(O)O]_pR^4$ in the presence of a base in an aqueous medium, wherein R^1 , R^2 , R^4 , n , and p have the same meaning as defined in claim 1 and X is a halogen atom.
- 25 11. A process according to claim 10, characterized in that a quaternary ammonium phase transfer or tertiary amine catalyst is present.
12. A hydroxydiacylperoxide obtainable by the process according to claim 1 wherein R^1 or R^3 represents a C_1 - C_{19} hydrocarbon group, optionally containing one or more hetero atoms, substituted with a hydroxy group, n ,

R², R⁴, and p have the meaning defined above, R⁵ represents hydrogen or a mono- or divalent C₂- C₂₀ acyl group, said acyl group optionally containing one or more hetero atoms, said acyl group optionally substituted with a hydroxy group, and m is 1 or 2, with the exception of benzoyl hydroxyacetyl peroxide, with the proviso that said hydroxydiacylperoxide does not contain a hydroxyphenyl moiety.

- 5 13. Use of a hydroperoxide according to Claim 1 in bleaching, oxidation, epoxidation, chain transfer, radical (co)polymerization, or (co)polymer modification reactions.
- 10 14. Use of a hydroperoxide according to Claim 1 in the preparation of poly(meth)acrylates.
- 15 15. A hydroxyperacid obtainable by the process according to claim 12 wherein R¹ or R³ represents a C₁-C₁₉ hydrocarbon group, optionally containing one or more hetero atoms, substituted with a hydroxy group, n, R², R⁴, and p have the meaning defined above, R⁵ represents hydrogen, and m is 1.
- 20 16. Use of a hydroperoxide according to Claim 13 in bleaching, oxidation, epoxidation, chain transfer, radical (co)polymerization, or (co)polymer modification reactions.